Communications Systems and Networks,

Second Edition

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It also is worth noting that ISDN is horribly wasteful of network resources in an Internet, WWW, or intranet application. Remember that ISDN is a circuit-switched service. Also remember from Chapter 1 that circuit switching provides temporary, continuous, and exclusive connectivity. Now, consider that interactive data applications such as the Internet, WWW, and intranet are best served by packet-based networks – as discussed earlier in this chapter. Several carriers, including Pacific Bell and US West, recently stimulated IDSN through tariffs that negated usage charges during off-peak hours. Those pricing plans proved highly successful because they encouraged the use of ISDN for purposes of access to the WWW. However, the increased usage of the PSTN, which we noted is highly inefficient for packet data application, caused substantial network congestion. Since then, manufacturers of carrier-class equipment have developed devices that recognize the telephone number of an ISP and shunt that traffic around the circuit switch to a packet-switched network, thereby eliminating this issue in equipped Central Offices.

ISDN Standards

As mentioned earlier in this chapter, ISDN standards are voluminous. While still under development in some respects, current ITU-T standards for ISDN include the following:

- I.441/4511: ISDN Primary Rate Interface (PRI)
- I.515: Parameters for ISDN internetworking
- Q.700: Signaling System Number 7 (SS7) specifications
- Q.921: Layer 2 specification for D channel; Link Access Protocol-D (LAP-D)
- Q.931: Layer 3 User Network Interface (UNI) specifications
- V.110: B-channel procedures (Europe) for Terminal Adapters (TAs)
- V.120: B-channel procedures (North America) for TAs

In addition to the ITU-T, other organizations are actively developing and promoting ISDN standards. For example, ANSI (United States) and ETSI (Europe) each lobby the ITU for the acceptance of their parochial ISDN variations.

ISDN Applications

The applications for ISDN are broad in range. While ISDN was long phrased *a technology in search of an application*, it recently has opened to applications developers, and aggressively so. There is no *killer ap* for ISDN; rather, there are a number of applications which, in total, promise to ensure the future of ISDN. A host of applications that benefit from the improved quality of digital networking and are bandwidth-intensive are well served by ISDN. Further, ISDN offers an affordable